

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air and Waste Management Bureau
1520 East Sixth Avenue
P.O. Box 200901, Helena, Montana 59620-0901
(406) 444-3490

FINAL AIR QUALITY ENVIRONMENTAL ASSESSMENT (EA) and
FINAL SOLID WASTE EA

Issued For: Holcim (US) Inc.
Trident Plant
4070 Trident Road
Three Forks, MT 59752

Permit Number: 0982-11

Draft EA Issued: 03/24/03

Final EA Issued: 08/15/03

1. **Legal Description of Site:** The Holcim (US) Inc. (Holcim) Trident facility is located near the Missouri Headwaters approximately 5 miles northeast of Three Forks, Montana. The legal description of the site is in the Northeast $\frac{1}{4}$ of Section 9, Southeast $\frac{1}{4}$ of Section 4, Southwest $\frac{1}{4}$ of Section 3 and Northwest $\frac{1}{4}$ of Section 10, Township 2 North, and Range 2 East in Gallatin County.
2. **Description of Project:** The proposed air quality permit application requested the mid-kiln combustion of whole waste tires to supplement up to 15% (on a British Thermal Unit (Btu) basis) of the required fuel for the kiln. Holcim anticipates that approximately one whole waste tire per revolution of the kiln (or approximately 657,000 tires per year) would be combusted in the kiln. However, at the request of Holcim, the permit would allow Holcim to combust tires consisting of up to 15% of the total fuel heat input (or 1,137,539 tires annually). In order for the tires to be inserted into the kiln, a mid-kiln injection system (i.e., gate) would be installed into the kiln shell. Holcim is currently authorized to combust up to 100% natural gas, up to 100% coal, up to 100% petroleum coke, or any combination of these fuels.

Scrap or waste tires are identified as a solid waste under Montana Code Annotated (MCA) 75-2-103(16)(a) and solid waste incineration of tires must follow the requirements of MCA 75-2-215. Under these requirements, Holcim must demonstrate that impacts from the project would constitute no more than a negligible risk to the public health, safety, and welfare, and to the environment. In addition, because Holcim would collect and store waste tires, this facility would be considered a Class III Resource Recovery facility under the Montana Solid Waste Act. Therefore, along with applicable potential air quality impacts, this EA addresses environmental issues related to the application for the Holcim tire resource recovery facility in which Holcim proposes to store waste tires in the old limestone quarry prior to incineration. The facility is not accessible to the general public, and contractors or Holcim employees would transport all tires to the facility.

3. **Objectives of Project:** Holcim's primary objective for this project is to establish lower operating costs and to increase operational flexibility at the Trident facility. In addition, the proposal would provide an opportunity for Holcim to use tires as a fuel source, while reducing the volume of tires that would be sent to landfills.

4. **Alternatives Considered:** In addition to the proposed action, the Department of Environmental Quality (Department) also considered the "no action" alternative. Under the "no action" alternative, the Department would deny the air quality preconstruction permit and/or not license the site as a tire resource recovery facility and none of the impacts discussed in this EA would occur. If the facility was not licensed for resource recovery, waste tires would continue to be disposed of at their current location, or the applicant could apply for a license at another location. However, because Holcim demonstrated that the proposed action would comply with all applicable statutes and rules as required for permit issuance, the Department eliminated the "no-action" alternative from further consideration.
5. **A Listing of Mitigation, Stipulations, and Other Controls:** A list of enforceable permit conditions and a complete permit analysis would be contained in Montana Air Quality Permit #0982-11. In addition, Holcim would be required to provide financial assurance sufficient to cover the cost of removing and disposing of the maximum number of tires that would be on the site as well as financial assurance sufficient to cover the cost of extinguishing a tire fire at the facility. Berms would be required to contain the potential volume of liquid that would be produced from a tire fire that burned the maximum number of tires at the site at any given time. Fifty-foot wide fire lanes would be required between each row of tire storage trailers and the fire lanes and general area in the vicinity of the tire storage trailers would be required to be kept free of vegetation.
6. **Regulatory Effects on Private Property:** The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements, and that these conditions do not unduly restrict private property rights.
7. **The following table summarizes the potential physical and biological effects of the proposed project on the human environment.** The "no-action alternative" was discussed previously.

Potential Physical and Biological Effects							
		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats					X	Yes
B	Water Quality, Quantity, and Distribution					X	Yes
C	Geology and Soil Quality, Stability, and Moisture					X	Yes
D	Vegetation Cover, Quantity, and Quality					X	Yes
E	Aesthetics			X			Yes
F	Air Quality					X	Yes
G	Unique Endangered, Fragile, or Limited Environmental Resource					X	Yes
H	Demands on Environmental Resource of Water, Air, and Energy					X	Yes
I	Historical and Archaeological Sites			X			Yes
J	Cumulative and Secondary Impacts					X	Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS:
The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

Potential impacts from this project on terrestrial and aquatic life and habitats would be minor because of the very minimal land disturbance caused as a result of the proposed project, minimal operational and/or physical modifications to the facility, and minor impact to the surrounding area from the air emissions (considering the area air dispersion characteristics) associated with the project. Land disturbance would consist primarily of the installation of a waste tire conveyor system to deliver the tires to the kiln for combustion and a waste tire storage area located on the previously disturbed industrial area/mine quarry floor. Both would have a very minor impact, if any, on the on-site terrestrial and aquatic life and habitats. Onsite waste tires would be stored in covered trailers to minimize rodent and insect infestation. Modification to the facility would involve the installation of a gate in the kiln shell that would provide the ability for tires to be dropped into the kiln for use as fuel. The modification would require additional equipment and specialized personnel but the overall construction impacts would be temporary and would have a minimal impact to the terrestrial and aquatic life and habitats. The Trident facility is located in an active, existing industrial/mining area. The surrounding area is currently used for farming, ranching, livestock grazing, rangeland, and recreation. Terrestrials (i.e., cattle, horses, deer, elk, rodents, and bear) near the Holcim facility use the area for food and water while the adjacent Missouri River provides habitat for various forms of aquatic life. A portion of the Holcim property is fenced, limiting access of terrestrials to the main manufacturing and storage area, but the fence would not likely restrict access to the site.

Results of the air dispersion modeling (See Section 7.F of this EA) performed for the criteria pollutant air emissions (i.e., oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter with an aerodynamic diameter less than 10 microns (PM₁₀), ozone (O₃), and sulfur dioxide (SO₂)) indicated that the impacts on the local terrain would be minor and would not exceed the Montana Ambient Air Quality Standards (MAAQS) or National Ambient Air Quality Standards (NAAQS). The MAAQS and NAAQS include both primary and secondary standards. Primary standards protect public health, including, but not limited to, the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including, but not limited to, protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Emissions of Hazardous Air Pollutants (HAP) were evaluated in the human health risk assessment required under MCA 75-2-215 and the Administrative Rules of Montana (ARM) 17.8.706(5) to assess the impacts from the proposal on human health. The proposed project would pose no more than a negligible risk to human health.

In addition to the human health risk assessment, a Screening Level Ecological Risk Assessment was completed by Holcim (submitted to the Department on October 23, 2002, and revised November 15, 2002, February 12, 2003, and March 17, 2003) to predict the potential impact of the HAPs related to the proposed project on ecological communities in the vicinity of the Trident plant. Exposure data for the screening level ecological risk assessment were based on HAP emissions for the project and the corresponding air dispersion modeling results used in the human health risk assessment. In general, screening level ecological risk assessments are conducted to evaluate whether or not there is a need for a more detailed site-specific baseline ecological risk assessment. A screening level ecological risk assessment provides a high level of confidence that an unacceptable hazard to ecological communities (hazard quotient of 1.0 or greater) would not be overlooked. Overall, screening level ecological risk assessments apply ecologically conservative and protective assumptions that overestimate the true risk to the local ecosystem.

Routes of exposure that were considered for ecological exposure included inhalation of constituents of potential concern (COPC) in ambient air; uptake into plants through roots and leaves; ingestion of chemicals from soils and food or prey; ingestion of chemicals from surface water; and direct dermal contact with COPC in surface water (for this project, the COPCs include cadmium compounds, chromium compounds, lead compounds, arsenic compounds, beryllium compounds, manganese compounds, mercury compounds, polynuclear aromatic hydrocarbons (PAH), dioxins/furans and other COPCs as identified in Appendix B and Appendix C of the October 3, 2001, Holcim application submittal). The potential hazard was modeled for each representative plant/animal species. Species (juniper, rabbit, red fox, red-tailed hawk, fish, worms, songbirds, benthic invertebrates, and aquatic macro invertebrates) were selected to represent the five functional groups (plants, herbivorous and carnivorous mammals, birds, and aquatic biota) found in the area. Selections were made based on discussions with Donald Skaar of the Montana Department of Fish, Wildlife, and Parks, and the personal experiences of Bison Engineering, Inc./Holcim personnel, who have observed one or more of these species near the facility. For each species, the sum of all exposure pathways was calculated to determine the hazard index. Hazard indices less than 1.0 indicate that the change in exposure under the conditions evaluated is unlikely to pose an unacceptable hazard to ecological receptors. The hazard index calculated for each species evaluated in the screening level ecological risk assessment was less than 1.0. Based on the conservative exposure assumptions and the results of the hazard index analysis, additional examination of potential ecological effects from the proposed project was deemed unnecessary and the likelihood of adverse effects was deemed low.

Although the Department determined that the impacts from the proposed project would have a minor impact on terrestrial and aquatic life and habitats, consideration of the other air emitting activities at Holcim may lead to a different conclusion. For example, a simple ratio of the project hazard quotient up to a cumulative hazard quotient based on the entire facility indicates that the quotient may be greater than 1.0. Such a calculation suggests that the impacts from this project, in conjunction with the impacts from current Holcim activities, may be significant. Therefore, until additional analyses are completed, the cumulative impacts of the proposed project, in conjunction with existing impacts, are unknown.

B. Water Quality, Quantity, and Distribution

The proposed project would result in minor impacts to water quality, quantity, and distribution in the vicinity of the Trident plant because the on-site physical disturbances would be small, the air emissions would have only minor impacts to the surrounding waterways, and the project would not result in any surface or groundwater discharges. The Department determined that the criteria pollutant air emissions would be in compliance with the NAAQS and MAAQS; the human health risk assessment demonstrated compliance with Montana's negligible risk standards for COPC; the results of the screening level ecological risk assessment demonstrated that the potential ecological impacts of COPC would be minimal; the predicted water concentrations from aerial deposition of the COPC would be below Montana's Numeric Water Quality Standards set to protect aquatic life and human health; the use of additional water for onsite road dust suppression or other uses would be very minor (if any); and this project would not discharge any type of additional waste effluent or water to any surface water drainage system or local groundwater aquifer, or alter the course or magnitude of groundwater or any surface water drainage system.

As described in Section 7.F of this EA, based on the emission modeling, and considering local dispersion characteristics such as wind speed, wind direction, atmospheric stability, and stack temperature, proposed emissions from the proposed project would not cause an exceedance of either the primary or secondary NAAQS or MAAQS. Secondary standards were specifically designed to protect the public welfare, including potential impacts to water resources. A human health risk assessment and a screening level ecological risk assessment were performed to address potential impacts of other COPC (i.e. hazardous air pollutants) associated with the proposed

project. The human health risk assessment (Refer to Section 7.F.) demonstrated that the proposed project would constitute no more than a negligible risk (as defined in ARM 17.8.740(10)) to the public health, safety, and welfare and to the environment. Various adult and child exposure pathways were evaluated and incorporated in the human health risk assessment, including the ingestion of surface water. A portion of the screening level ecological risk assessment was also focused on the potential impact to aquatic species (i.e., fish and benthic invertebrates). The overall hazard index for the aquatic biota was less than 1.0, and the change in concentrations for COPC would not be expected to exceed the EPA water quality benchmarks for freshwater aquatic biota. Thus, the screening level ecological evaluation indicated that the potential change in exposure from air emissions from this project would not likely pose an unacceptable ecological hazard to aquatic biota. In addition, a comparison of the predicted impact to the Missouri River from aerial deposition using the maximum predicted concentration at a receptor (from the air dispersion modeling) was compared to Montana's Numeric Water Quality Standards. The rate of air deposition was converted into water concentrations based on a representative surface area of the river and an estimate of the number of volume changes per year. Results demonstrated that the predicted change in water quality concentrations from the air emissions would be significantly below Montana's Numeric Water Quality Standards.

Onsite waste tires would be stored on previously disturbed industrial/mining terrain in enclosed containers designed for safe tire storage and low fire potential. Therefore, water would not be impacted by the on-site storage of tires. A very minor amount of additional water may be necessary for onsite road dust suppression. Holcim would not discharge any waste effluent or water to any surface water drainage system, local groundwater aquifer, or alter the course or magnitude of groundwater or any surface water drainage system as a result of this project. Therefore, the proposed project would result in no more than minor impacts to water quality, quantity, and distribution.

The analyses conducted for this project (other than for dioxin) did not consider the impacts from HAPs or other non-regulated pollutants emitted by existing operations at Holcim. The result of including such existing HAP and/or non-regulated pollutant emissions in the analysis may be that a significant cumulative impact on water quality is predicted. Therefore, until additional analyses are completed, the cumulative impacts of this project on water quality are unknown.

C. Geology and Soil Quality, Stability, and Moisture

Potential impacts to local geology and soil quality, stability, and moisture from this project would be minor because the project would impact a relatively limited portion of previously disturbed property at the Trident plant and the amount of deposition of air emissions resulting from this project would be minimal. Waste tires would be transported via truck and stored onsite prior to being transported to the tire conveyor system for insertion into the kiln. The tire conveyor system and the tire storage area would be located on previously disturbed land and/or the quarry floor at the plant. Onsite waste tires would be stored in covered storage to minimize potential fire hazards and rodent or insect infestation. Trucks and/or rail would be used to transport tires to the plant, but the impacts within the plant area would be of short time duration and limited primarily to paved roadways and rail. Any on-site unpaved roads would be sprayed with water, as necessary to minimize fugitive emissions. Thus effects on soil moisture would be minor. The project also would not result in the discharge of any waste/water effluent to the local soil or waterways.

A portion of the air emissions related to the project would impact local soils, but that impact (deposition) to geology and soil quality, stability, and moisture would be minor because of the air dispersion of the pollutants. The Department determined that the proposed project demonstrated compliance with the NAAQS and MAAQS, the human health risk assessment demonstrated compliance with Montana's negligible risk requirements, the screening level ecological risk assessment confirmed that the exposure from this project would not likely pose an unacceptable

hazard to ecological receptors in the vicinity of the Trident Plant, and the air emissions associated with the project would not change the physical characteristics of the local soil. Negligible risks were identified from the change in exposure to affected soils in the human health risk assessment and screening level ecological risk assessment.

Impacts to the geology and soil quality, stability, and moisture associated with the construction of the kiln gate, tire conveyor system, or other miscellaneous activities at the plant would be minor because the disturbance for the activities would be within a current industrial location, the activities would be very minor and temporary, and the activities would not change the overall soil characteristics of the area.

The analyses conducted for this project (other than for dioxin) did not consider the impacts from HAPs or other non-regulated pollutants emitted by existing operations at Holcim. Consideration of such existing HAP and/or non-regulated emissions may indicate that a significant cumulative impact on soil quality would occur. Therefore, until additional analyses are completed, the cumulative impacts of this project, in conjunction with existing impacts, are unknown.

D. Vegetation Cover, Quantity, and Quality

Potential impacts on the vegetation cover, quantity, and quality from the proposed project would be minor in the immediate area of the Trident plant because the project (i.e., handling and combustion of waste tires) would occur on previously disturbed industrial terrain and the resulting deposition from air emissions associated with the project would be relatively minimal. As described in Section 7.F of this EA, the modeled air quality impacts of the air emissions from the kiln would be in compliance with both the primary and secondary NAAQS and MAAQS. Secondary standards were designed to protect public welfare, including protection against damage to vegetation.

In addition, the potential effects on human health from vegetation consumption were addressed in the human health risk assessment and screening level ecological risk assessment. Vegetation impacted by pollutant deposition was factored into the analysis. Results of the human health risk assessment demonstrated that the impacts from the proposed project (including the potential ingestion of vegetation) would not result in a change in the excess lifetime cancer risk or non-cancer hazard that exceeds Montana's negligible risk standard for any individual chemical of concern, nor for the aggregate of the pollutants of concern, from this project. Likewise, the screening level ecological risk assessment indicated that exposure from the change in air emissions associated with the proposed project on local vegetation would not likely pose an unacceptable hazard to ecological receptors in the vicinity of the Trident Plant. The representative native plant species selected in the area was the juniper plant because of its availability and long growing season. However, toxicity reference values reported for the juniper are not species-specific, but represent data compiled by the EPA from toxicity tests on a variety of vegetation, including grasses, forbs, and some shrubs. The juniper was selected to represent vegetation on site and the various plant communities from which these data were drawn. Consequently, consideration of grasses and other herbaceous species, which may be more sensitive or ecologically valuable, was included. The potential hazard for plants (i.e. the juniper plant) was evaluated by comparing the modeled change in average soil concentration to appropriate soil phytotoxicity benchmarks. Based on the results of the screening level ecological risk assessment, the hazard index for the juniper plant was less than 1.0 (1.35E-01), which indicated that the adverse impacts from changing fuels would be low. Hazard indices of less than 1.0 indicate that the potential exposure from this proposed project would be unlikely to pose an unacceptable hazard to ecological receptors.

The potential impact to organic farms near the Trident Plant was evaluated based on both federal and/or Montana organic farming standards for chemicals in soil and water. Doug Crabtree of the Montana Department of Agriculture indicated that Montana plans to adopt the federal organic farming program for certifying and supervising organic farms and farm products, but Montana has

not yet developed organic farming standards. Keith Jones, Director of Program Development, National Organic Program (NOP), U.S. Department of Agriculture (USDA) indicated that neither the NOP nor the USDA have developed organic farming standards for metals or organics in soil or water. The level in the new federal organic farming standards (Section 205.671) that constitutes unavoidable residual environmental contamination is 5% of the EPA tolerance level or the Food and Drug Administration (FDA) action level; however, the EPA and FDA levels apply to pesticides, not the COPC evaluated in the human health risk assessment. The human health risk assessment evaluated risks from the food pathway at the highest exposure point, which is located on the property boundary. Predicted risk from food ingestion was much less than the inhalation pathway, and all risks were negligible. Therefore, based on the overall conservative approach of the human health risk assessment and the screening level ecological risk assessment and the distance between the organic farms and the facility (Clarkston Area Farms \approx 10 miles and Wheat Montana \approx 2 miles), the impacts from this project to the vegetative cover, quantity, and quality would be minor and the effects from this project on the organic farming certification requirements or standards would also be minor.

The analyses completed for this proposal (other than for dioxin) focused on the potential impacts from this project and did not include the cumulative impacts from other existing HAP and/or non-regulated pollutant emissions at the Holcim facility. Inclusion of the impacts from the other existing air emitting activities may significantly affect the outcome of the impact analyses for vegetation cover, quantity, and quality. Furthermore, inclusion of these emissions may significantly affect the impact analyses for human health based on the consumption of vegetation (naturally grown or farmed). Therefore, until additional analyses are completed, the cumulative impacts of this project, in conjunction with existing impacts, are unknown.

E. Aesthetics

Impacts from the proposed project on the area aesthetics would be minor because the physical and operational modifications to the Trident facility would be minimal, and the modifications would occur in a previously disturbed industrial/mining area. Raw materials used in the cement making process at the Trident plant are mined from an onsite quarry located just southwest and adjacent to the facility. Because industrial and mining related activities and building structures associated with the manufacturing of the cement are located within the plant boundary, the additional noise from the proposed project would be relatively small compared to onsite sources and activities that would be associated with the production of cement.

Cement production at the Trident facility would continue to include onsite activities such as blasting from the onsite quarry and raw material truck loading for transport to the primary crusher or to onsite stockpiles. From the primary crusher, the raw materials would continue to be conveyed to storage bins. From the storage bins, the raw materials would continue to be conveyed to the ball mill for grinding with water to form slurry prior to being sent to storage tanks for use in the 450-foot long, 12 to 14 feet diameter, rotary kiln for high temperature (greater than 2000 °F) processing into clinker. As clinker leaves the kiln, it would continue to be cooled and transported to clinker bins or outside storage. From the storage bins or outside storage sites, the product would continue to go to the finish mills for processing and grinding into Portland cement, which is eventually loaded into onsite railroad cars or trucks for distribution to customers. The addition of tires to the fuel mixture for Holcim would result in only minor impacts to the aesthetics of the facility, primarily the addition of covered storage containers for the tires.

Additional noise from this project would primarily result from transporting the waste tires to the kiln (via a conveyor system) for combustion and from additional vehicle traffic that would transport the waste tires to the facility. The proposed tire conveyor system and associated equipment would be located inside the property boundary primarily on the south side of the kiln to minimize noise and visual impacts to the surrounding area (i.e., Missouri River). Vehicle traffic associated with

these activities would primarily use existing paved and non-paved roads. The amount of vehicle activity in the area would not increase substantially over the existing traffic. Visible emissions from the tire conveyor and onsite roads would be limited to less than 20% opacity. The tires (for fuel) stored onsite would be contained in covered storage.

The facility is located approximately 5 miles northeast of the town of Three Forks near the headwaters of the Missouri River. The area surrounding the Trident facility is currently used for a variety of activities such as farming, ranching, livestock grazing, rangeland, and recreation. Although some limited onsite housing is available to employees, the distance to the nearest offsite residence is approximately 1 mile east of the Trident Plant. Activities associated with the construction and operation of the proposed project may be partially visible from various locations in the general area including State Secondary Route 286, approximately 500 feet to the north, the Missouri River approximately 1,000 feet to the north, and the county road approximately 600 feet east of the project area. However, based on the visibility of the current structures within the plant area and local topography, the impact on aesthetics from the proposed project (i.e., conveyors, kiln gate, storage trailers) would be minor. Other structures and equipment currently visible in the plant area include crushers, conveyors, screens, raw material storage piles, storage silos, a 450-foot long (12 to 14 foot diameter) rotary kiln, 130 foot high (10 foot diameter) stack, pollution control equipment, railcars, railroad grade, dump trucks, railcars, feed tanks, industrial buildings, office buildings, electrical power poles, electric power lines, etc. The proposed project would have minor impacts on aesthetics because the activities associated with this project would not likely be visible to the public because of the relative remote location of the facility and the industrial operations already occurring at the site.

F. Air Quality

The proposed use of waste tires as a supplemental fuel source for up to 15% of the total heat input in the kiln would result in minor air quality impacts because, with the exception of CO, the projected increase in criteria air pollutants would be minimal; the projected change in air emissions would not cause an exceedance of the Primary or Secondary NAAQS or MAAQS; and the modeling of the projected change in COPC (i.e., HAP emissions) demonstrates compliance with Montana's negligible risk standard. As shown on Table F-1 from a criteria pollutant emissions analysis submitted to the Department on December 21, 2000, by Holcim, NO_x, SO₂, particulate matter (PM), total hydrocarbons (THC), and lead (Pb) would not likely increase from the use of tire-derived fuel (TDF). Emission data summarized in Table F-1 were collected from 11 other cement-manufacturing facilities located throughout the United States. Based on emissions information from other facilities, CO was identified as having the potential to increase above Prevention of Significant Deterioration (PSD) significant levels (or greater than 100 tons/year) as a result of this project. The potential increase in CO was estimated at 189 tons per year.

Table F-1. Criteria Pollutants - TDF Emission Data Summary (except CO)

Average Data	Pollutant Emissions (lb/ton clinker)														
	NO _x			SO ₂			PM			THC			Pb		
	W/o TDF	with TDF	%Δ	w/o TDF	With TDF	%Δ	w/o TDF	With TDF	%Δ	W/o TDF	With TDF	%Δ	W/o TDF	With TDF	%Δ
All Kilns	7.32	5.67	-23%	5.29	4.35	-18%	0.33	0.27	-17%	0.68	0.66	-3%	7.32E-04	3.58E-04	-51%
All Dry Kilns	4.32	3.26	-25%	2.37	2.84	20%	0.18	0.19	6%	0.35	0.32	-10%	8.56E-04	3.86E-04	-55%
All Wet Kilns	11.81	9.28	-21%	9.68	6.62	-32%	0.55	0.40	-29%	1.51	1.51	0%	4.85E-04	3.01E-04	-38%
Whole Tires at Mid-kiln	10.60	7.51	-29%	2.21	2.25	2%	0.54	0.55	2%	0.36	0.31	-13%	1.36E-03	6.39E-04	-53%
Coal and Coke Baseline	12.00	10.20	-15%	12.8	9.46	-26%	1.09	0.533	-51%	NA	NA	NA	2.46E-04	1.78E-04	-28%
Coal Baseline	4.26	3.43	-19%	3.64	3.24	-11%	0.18	0.20	13%	0.56	0.51	-8%	8.56E-04	3.86E-04	-55%

Note: Information taken from Holcim's January 31, 2002, submittal.

Holcim submitted air quality dispersion modeling, which factors in various parameters such as local wind speed, wind direction, atmospheric stability, stack temperature, and stack emissions. The modeling results demonstrated that the emission impacts of criteria pollutants from the facility with the proposed project would be below the NAAQS and MAAQS. All criteria pollutants were evaluated in the analysis including CO, Pb, NO₂, ozone (as volatile organic compounds (VOC)), SO₂, and PM₁₀. The AERMOD dispersion model (beta version #01247) was used for the air quality analysis for this project. Although AERMOD is not currently identified in the EPA Guidance Document as an approved model, the April 21, 2000, *Federal Register* contains a proposed rule that when adopted will make AERMOD the preferred air dispersion model. The Department approved the use of AERMOD as part of the initial application review. Since the Department's initial approval for Holcim to use the AERMOD model, AERMOD has been revised (beta version #02222). The Department agreed with Holcim that the initial approved model (beta version #01247) should continue to be used to maintain consistency with earlier modeling. The emissions from CKD emission sources that were not included in the initial model were later included in the modeling. The Department also requested that Holcim conduct modeling using the new beta version of AERMOD to make sure that the facility would comply with ambient air quality standards. Based on the modeling results of the most recent version of AERMOD, the Department determined that an hourly NO_x emission limit was needed in the permit to ensure modeled compliance with the ambient air quality standards.

AERMOD is more advanced than previous models and allows for more accurate estimates of pollutant concentrations in complex terrain. AERMOD is also designed to accept input data prepared by two specific pre-processor programs (AERMET and AERMAP). The air dispersion modeling analyses were conducted using onsite meteorological data collected from April 1, 2000, through March 31, 2001, along with cloud cover and upper air data for the same time period from the Great Falls, Montana International Airport NWS Station. The Great Falls upper air data was used because that is the closest and most representative quality assured upper air data for the Trident area. The terrain data processed by AERMAP for use in AERMOD included 1:24,000 digital elevation model (DEM) files using the Logan and Three Forks quadrangles from the United States Geological Survey (USGS). For the analysis, two receptor systems were developed. The preliminary system varied in coarseness from 100 meter to 1,000 meter spacing and was used to identify the hotspots. A finer grid was also developed with 50-meter spacing that extended approximately 200 meters on either side of the hotspot(s) identified by the preliminary modeling.

In order to determine compliance with air quality standards, emission rate model inputs were compiled for PM₁₀, SO₂, NO_x, CO, VOC, and Pb based on the previous operational limitations placed in Permit #0982-10, facility source test data, and AP-42 emission factors (Note: AP-42 is an EPA supported database with air pollutant emissions factors for various sources including cement kilns). Table F-2 provides the emission rates used in the modeling analysis. Compared to baseline conditions, CO would be the only criteria pollutant that would increase.

Table F-2. Emission Rates for Holcim Trident Facility

Pollutant	Emission Rates			
	lb/ton clinker	lb/hr	g/sec	Tpy
PM ₁₀	0.77	37.4	4.71	164
SO ₂		124	15.6	543
NO _x		1,568	197.6	6868
CO	1.46	70.8	8.92	310
VOC	0.027	1.30	0.165	6
Lead	0.00071	0.034	0.004	0.15
Maximum clinker production is assumed to be 425,000 tons per 12-month period. Continuous operation assumed (8760 hours per year).				

Note: Information taken from Holcim's May 31, 2002, submittal.

In order to obtain the predicted concentration for each criteria pollutant and compare it with the MAAQS and NAAQS, the predicted highest and second highest predicted concentrations were added to the estimated background concentrations. For the modeling analysis, the Department's May 19, 1992, Guidance Statement titled *Background Pollutant Values for Montana Dispersion Modeling* was used for background pollutant concentrations. A single emission rate (i.e., one gram per second) was modeled to establish predicted concentration values at key receptors in terms of that base emission rate. Criteria pollutant concentrations at those key receptors were then determined based on their estimated emission rate. The Department independently reviewed and approved the air dispersion modeling analysis provided by Holcim. Table 3 provides the modeled predicted concentration as well as the total concentration from the Holcim facility for the various criteria pollutants and identifies the MAAQS and the NAAQS for comparison. In order to obtain a more realistic predicted concentration of atmospheric NO₂, the Ozone Limiting Method (OLM) was used for the 1-hour MAAQS. The ambient concentration of ozone in the OLM analysis was obtained from data collected at Holcim's Devil's Slide Plant in Morgan, Utah because no comparable data was available from Montana. Based on the results of the modeling analysis provided in Table F-3, the proposed project would not cause or contribute to a violation of the NAAQS or MAAQS.

Table F-3. Predicted Concentrations Compared to Ambient Standards

Pollutant	Averaging Period	Predicted Concentration (µg/m ³)	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	MAAQS (µg/m ³)
CO	1-hour H2H	182	1725	1,907	40,000	26,450
	8-hour H2H	48	1150	1198	10,000	10,350
NO ₂	1-hour H2H	4030	75	555 ^a	None	564
	Annual	91	6	74	100	94
Lead	Monthly	0.058	Not available	0.058	1.5	1.5
	Quarterly	0.0030	Not available	0.0030	None	1.5
PM ₁₀	24-hr H2H	15	30	45	150	150
	Annual	2	8	10	50	50
SO ₂	1-hour H10H	209	35	244 ^c	None	1300
	3-hour H2H	159	26	185	1300	None
	24-hour H2H	48	11	59	365	262
	Annual	7	3	10	80	52
Ozone as VOC	1-hour H2H	3	80 ^d	83	235	196
	8-hour H2H	0.9	80 ^d	81	None	157

^a Based on ozone limiting method.
^b Based on ambient ratio method.
^c Modeled high 10th high Standard is not to be exceeded more than eighteen times in twelve months.
^d Based on Holcim's Devil's Slide facility located near Salt Lake City.

Note: General information taken from Holcim's May 31, 2002, submittal.

In addition to the above described air quality analysis for criteria pollutants (PM₁₀, SO₂, NO_x, CO, VOC, and Pb), other potential air pollutant emissions (i.e. HAPs) associated with the project were evaluated in the human health risk assessment. The purpose of the human health risk assessment was to scientifically evaluate the change in potential carcinogenic and non-carcinogenic hazards that would be attributed to the proposed project under normal and upset operating conditions of the kiln. Normal kiln operating conditions were defined as the time when the pollution control equipment such as the electrostatic precipitator (ESP) was operating. Upset operating conditions at the facility were defined as the periods of time when the ESP was offline (or bypassed) to prevent potential explosions or fire. Both the normal and upset emission exposure scenarios were evaluated in the risk assessment.

In order to provide an estimate of human health risk during an upset exposure scenario, some general assumptions were necessary including: 1.) A facility upset caused the ESP to be taken offline resulting in uncontrolled emissions of particulate HAPs. 2.) Duration of an upset was estimated based on upset data collected in 2000 and 2001. 3.) Kiln temperature remained

sufficiently elevated during an upset such that HAPs emissions were unchanged. 4.) Only particulate-based HAP concentrations changed during an upset since the upsets are based on the availability of the particulate control device (Gaseous HAP concentrations were identical to that evaluated in the acute risk assessment). From literature searches and Holcim's professional experience, particulate HAPs controlled by the ESP include mercury, antimony, lead, cadmium, selenium, zinc, chromium, arsenic, nickel, manganese, hydrogen chloride, hydrogen fluoride, dioxins, and furans. With the exception of mercury, all of the previously listed metal HAPs were assumed to be in particulate form. Based on Holcim experience, the ESP would collect approximately 5% of the mercury, hydrogen chloride, and hydrogen fluoride gaseous emissions. Based on a literature reference, dioxins/furans were assumed to be 20% particulate and 80% gaseous.

In the risk assessment for normal operating conditions, exposure pathways that were evaluated included inhalation, soil ingestion, water ingestion, dermal contact, consumption of beef, poultry, pigs, goat/sheep, and fish; root, vine, and leaf produce; milk and eggs; and mothers milk. For the upset operating scenario, only the inhalation exposure pathway was evaluated because the acute duration exposures would be significantly greater than dermal contact, water or soil ingestion, or food consumption. Human exposure to chemicals of concern (i.e., HAPs) was quantified by using algorithms published in 1993 by the California Air Pollution Control Officers Association (CAPCOA) in consultation with the Office of Environmental Health Hazard Assessment (OEHHA) of the California Air Resources Board (CARB). Additional information and assumptions relating to the risk assessment are available in the original October 3, 2001, permit application and subsequent deficiency letter responses submitted to the Department by Holcim.

Human health risks calculated from the risk assessment for the project were compared to Montana's negligible risk standard described in ARM 17.8.740(10). In order to meet the negligible risk standard, there cannot be an increase in excess lifetime cancer risk (incremental increased risk for cancer that is associated with exposure from the proposed project) of more than 1.0×10^{-6} for any individual pollutant or 1.0×10^{-5} for the aggregate of all pollutants. Also, there cannot be an increase in the sum of the non-cancer hazard quotients of 1.0 or more as determined by the risk assessment. The cancer risk is expressed as a probability that an adverse health impact may occur because of an exposure to COPC. The hazard quotient is the ratio of the exposed concentration to a concentration at which symptoms of toxicity may begin to occur. Hazard quotients less than 1.0 indicate that exposure is below a level that would cause a toxic effect. Various categories of COPC were identified and included in the risk assessment such as polychlorinated dibenzo(p)dioxins (PCDD), polychlorinated dibenzofurans (PCDF), polynuclear aromatic hydrocarbons (PAH), and metals.

In order to identify the COPC associated with the combustion of tires at the Trident facility, Holcim gathered previously published emission source test data from stack testing at other cement kilns across the United States. Although numerous other cement-manufacturing facilities use tires as a fuel for their kilns, source test data from facilities similar to the Trident plant (i.e., wet process kiln) was limited, especially HAPs source test data. With the purpose of obtaining a more extensive data set, emission test results from a variety of cement manufacturing plants (e.g. both wet and dry kiln types) were considered in estimating the change in HAP emissions from the Trident plant. Because the kiln size is related to the amount of fuel required for processing the raw materials, the projected emissions were scaled based on the percentage of the overall heat input of the kilns. A total of 13 data sets comparing the change in emissions related to the use of tire-derived fuel were evaluated in the risk assessment. From the data available from the 13 facilities, either the maximum projected emission value or a 95 percent upper confidence level was used to predict changes in emissions related to the burning of tires at the Trident plant. Once the predicted change in HAP stack emissions from the Trident kiln was estimated, air dispersion modeling was completed to predict ground level concentrations of air pollutants. The risk assessment used the ground level concentrations to predict human and ecological exposure through inhalation, dermal contact, and

ingestion exposure routes. These exposure concentrations were compared with toxicity values to calculate the risks associated with the use of tires as a fuel for the kiln. The risk assessment was performed in accordance with generally accepted risk assessment procedures developed by the U.S. EPA and CAPCOA.

In air dispersion modeling submitted by Holcim, receptor grids were created to predict area wide peak impacts. Specific impact areas of interest covered by the receptor grid included the Missouri River; Missouri River Headwaters State Park; Trident Housing located within the plant property boundary; the nearest off-site residence, roadways, and Three Forks High School. Using the EPA model AERMOD, the receptor system was varied from 100-meter to 1,000-meter spacing to identify the hotspots. A finer grid was developed with 50-meter spacing that extended approximately 200 meters on either side of each hotspot identified by the preliminary modeling. The AERMOD modeling analysis for this project predicted a maximum annual and maximum 1-hour concentration of 0.46 micrograms per cubic meter per gram per second ($\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$) and 27.50 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$, respectively. These concentrations were predicted to occur at the northeast property. A single emission rate (i.e., 1.0 gram per second) was modeled to establish the predicted maximum annual and 1-hour concentration values (0.46 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$ and 27.50 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$, respectively) at key receptors in terms of that base emission rate. The modeled COPC concentrations at those key receptors were then determined by rationing the predicted concentration values to account for the emission rate (grams/second) of each COPC. For the purpose of providing an estimate of the human health risk under normal operating conditions, the chronic exposures for each COPC were based on the maximum annual predicted concentration of 0.46 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$ and the short term or acute duration exposures were based on the maximum 1-hour concentration of 27.50 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$. Under upset operating conditions, the exposure risk calculations for each COPC were also based on the first high model results of 27.50 $\mu\text{g}/\text{m}^3/\text{g}/\text{sec}$. The “first high” model result is the highest predicted one hour impact of all one-hour intervals evaluated. The use of maximum predicted annual average concentration for the long-term, chronic exposure scenario and the one-hour concentrations for short-term exposures associated with the acute exposure scenario and the upset exposure scenario ensures that the overall results generated from the risk assessment are conservative and demonstrate protection of human health.

The risk assessment for this project evaluated a hypothetical, future residential exposure scenario at the point of highest exposure along the Holcim property boundary. The exposure concentration was based on the maximum projected change in HAP emission rate under normal operating conditions using AERMOD. Based on this conservative exposure scenario, this project would not exceed Montana’s negligible risk standard because the increase in excess lifetime cancer risk would be less than 1.0×10^{-6} for any individual pollutant and less than 1.0×10^{-5} for the aggregate of all pollutants. Also, the sum of the non-cancer hazard quotients would be less than 1.0. Results from the risk assessment for the long-term, chronic exposure scenario under normal operating conditions estimated the highest potential change in cancer risk at the maximum impact receptor for an individual pollutant would be 8.6×10^{-7} for formaldehyde and the aggregate of all pollutants would be 1.2×10^{-6} . The sum of the non-cancer hazard quotient would be 0.48. For the short-term upset exposure scenario, the risk analysis demonstrated that the change in 1-hour ground level concentrations would not result in risks that exceed the non-cancer hazard quotient of 1.0 or the acute reference exposure levels (REL) developed by the California Environmental Protection Agency (CalEPA) OEHHA. The concentration levels at or below which no adverse health effects are anticipated for a specific exposure duration is termed the REL. The average upset duration from data collected for the years 2000 and 2001 was approximately 13.2 minutes. The non-cancer hazard quotient for an estimated upset duration of 30 minutes would be 0.302, which is below Montana’s negligible risk standard of 1.0. To be conservative under the air quality permit, the injection of tires into the kiln would be required to be discontinued if an upset condition lasts 15 minutes or more.

In addition to meeting Montana's negligible risk requirements, the projected change in the amount of HAP emissions for the proposed project would be relatively small. Criteria pollutants as well as non-criteria pollutants (i.e. HAPs) are emitted from the combustion of fossil fuels. The Trident facility is currently permitted to use various fuels such as coal, petroleum coke, and natural gas to heat its kiln. Because the Trident facility already uses these fuels and the amount of tires to be combusted would be limited through conditions in Permit #0982-11 to only 15% of the total heat input, the potential impacts to air quality from the proposed project would be minor. In addition, permit limits and conditions would be placed in Permit #0982-11 to protect human health and the negligible risk standard.

Fugitive air emissions from onsite land disturbance for the installation of the equipment required for the project would be minor and temporary. Installation of the equipment would require the use of motor vehicles or other heavy equipment, but the impacts would be minor and of a short time duration. During operation of the equipment, waste tires would be transported to the facility by tractor-trailer or rail and stored in covered containers. The waste tires would be transported to the kiln for combustion by means of a conveyor system. The proposed tire conveyor system and associated equipment would be located inside the property boundary and vehicle traffic associated with these activities would primarily use existing paved and non-paved roads. The amount of vehicle activity in the area would not increase substantially over the existing traffic and, as a result, the potential impacts would be minor.

CO₂ emissions could potentially increase as a result of this project. The estimated CO₂ emissions from the facility are 446,250 tons per year, based on the AP-42 emission factor for a wet process kiln. However, the type of fuel combusted while establishing the AP-42 emission factors was not identified. Therefore, whether or not such an emission factor would include tire emissions is unclear. The carbon content of fuels currently used at the facility (i.e., coal) is similar to the carbon content of waste tires; therefore, the change in CO₂ emissions would be minor. Information submitted by Holcim indicates that the percent change in CO₂ emissions from combusting tires in comparison to combusting coal would be small. The percent increase in CO₂ emissions from the use of tires in comparison to the use of coal was estimated to be about 1% (1% for up to 15% of the time). The CO₂ emissions would be minor when compared to the CO₂ emissions from other industrial or natural sources in Montana. In addition, there are no ambient air quality standards for CO₂, and CO₂ is not a regulated pollutant under the Federal Clean Air Act or the Clean Air Act of Montana.

Except for dioxin, the analyses and associated permit conditions regarding this project were based only on the air emissions from the use of tires for fuel and did not consider the existing HAP or other non-regulated pollutant emissions. Also, the pollutants for which risk information was not available were not considered in the analysis. Consideration of other existing HAP and/or non-regulated pollutant emissions may significantly affect the outcome of the air quality analyses and may, therefore, lead to a prediction that a significant cumulative impact on air quality would occur. Therefore, until additional cumulative analyses are completed, the cumulative impacts from this project on air quality are unknown.

G. Unique Endangered, Fragile, or Limited Environmental Resources

In order to identify any species of special concern in the immediate area of the proposed project, the Department contacted the Montana Natural Heritage Program of the Natural Resource Information System (NRIS). The Montana Natural Heritage Program identified two species of concern within an approximately two-mile radius of the facility, including the Bird Rookery (Great Blue Heron) and *Spiranthes Diluvialis* (Ute Ladies' Tresses). A total of 38 Great Blue Heron nests (18 occupied) were documented in 1991 along the Gallatin River approximately 2 miles south-southeast of Trident. In 1949, a *Lampropeltis Triangulum* (Milk Snake) was observed approximately 5 miles from the Trident Plant, near Three Forks. In 1997, a total of 15 flowering

plants of Ute Ladies' Tresses were documented south of Trident on state land in a small seepage zone above a backwater slough of the Madison River. In 1899, *Castilleja Exilis* (Annual Indian Paintbrush) was observed approximately 5 miles southeast of the Trident Plant near Logan. In 1959, *Primula Incana* (Mealy Primrose) was observed approximately 5 miles southeast of the Trident Plant near Logan. According to information provided by the United States Department of the Interior Fish and Wildlife Service, federally listed endangered, threatened, proposed, and candidate species in Gallatin County include *Haliaeetus leucocephalus* (Bald Eagle), *Ursus arctos horribilis* (Grizzly Bear), *Zaitzevia thermae* (Warm Spring Zaitzevian Riffle Beetle), *Canis lupus* (Gray Wolf), *Lynx canadensis* (Canada Lynx), and *Thymallus arcticus* (Montana Arctic Grayling).

Holcim analyzed the following species in the screening level ecological risk assessment: Grizzly Bear, *Grus Americana* (Whooping Crane), *Numenius borealis* (Eskimo Curlew), Bald Eagle, *Mustela nigripes* (Black-Footed Ferret), Canada Lynx, *Acipenser transmontanus* (White Sturgeon), *Sterna Antillarum* (Least Tern), *Salvelinus confluentus* (Bull Trout), Gray Wolf, *Charadrius melodus* (Piping Plover), *Scaphirhynchus albus* (Pallid Sturgeon), *Howellia auatilis* (Water Howellia), *Silene spaldingii* (Spalding's Catchfly), and Ute Ladies' Tresses. Holcim selected the species based upon the U.S. Fish & Wildlife Service's Threatened and Endangered Species System (TESS) list.

Based on results of the air quality modeling, the human health risk assessment, and the screening level ecological risk assessment, impacts from the proposed project on the unique, endangered, fragile, or limited environmental resources in the area would be minor. A brief overview of the air dispersion modeling and human health risk assessment analysis results was presented in Section 7.F of this EA while the ecology and water quality evaluation was provided in Sections 7.A and 7.B. Results of the analyses indicated that the impacts from the projected change in air emissions from this project would be minor.

The proposed use of waste tires as a fuel would have minor impacts on limited non-renewable resources such as coal because tires would displace up to 15% of the total fuel heat input in the Trident kiln. Consequently, less coal and other fuels would be required and transported for the facility. Overall, use of waste tires as a fuel for the kiln would likely reduce the disposal of whole tires in area landfills. In general, landfill disposal of tires is more expensive than the disposal of an equivalent weight of solid waste. Because of the cost associated with disposing of whole tires without a use for the tires, unwanted or unused stockpiles may develop. Improper tire management from stockpiling tires may present significant risk to the public health and environment such as the potential for tire fires, visual disturbance, public expense for removal, and diseases from various rodents and insects.

Because of the physical characteristics of tires, even after closure of a landfill, whole tires may often make their way to the surface and penetrate the final cover. Although landfilling tires is a relatively safe method of disposal, after burial, it is unlikely they would be recovered economically for use as a potential resource. As a potential fuel source, tire-heating values range from approximately 12,000 to 16,000 Btu per pound compared to 11,000 to 13,000 Btu per pound for bituminous coal. Although there is not an exact known number for the amount of waste tires generated on an annual basis in Montana, according to the EPA, approximately 1 waste tire per person per year is generated in the United States. In 2000, Montana's Census data indicated a total population of 902,195. The Trident plant would use approximately 657,000 tires per year, but would be allowed by permit to use up to 1,137,539 tires per year. Holcim has expressed interest in using an in-state contractor to supply the waste tires for the plant. In order to maintain a consistent feedstock for the plant, the contractor would obtain the tires from Montana and/or neighboring states, if necessary.

The analysis of impacts to unique endangered, fragile, or limited environmental resources was based solely on emissions from the current proposed project, except for dioxin emissions. Combined dioxin emissions from the entire facility and the use of tires for fuel were considered. Consideration of the other existing HAP and non-regulated pollutants in the analyses may indicate that significant cumulative impacts on the unique endangered, fragile, or limited environmental resources would occur. Therefore, until additional cumulative analyses are completed, the cumulative impacts from this project, in conjunction with existing emissions, are unknown.

H. Demands on Environmental Resource of Water, Air, and Energy

Potential impacts to local water resources would be minor, if any, because the proposed use of waste tires as a supplemental fuel for the kiln would not require additional demands on water resources. This project would entail some limited modifications to install equipment to handle tires and the addition of a gate in the mid-section of the kiln, but it would not change demands on local surface water or groundwater. In addition, as described in Section 7.F of this EA, the potential impact on the air resources in the area of the facility would be minor because, with the exception of CO, the projected change in air emissions from the project would be relatively small. Criteria pollutant air modeling for CO, VOC, PM₁₀, NO_x, SO₂, and Pb demonstrated that the emissions from the facility as a result of the proposed project would not exceed ambient air quality standards. HAP emissions associated with the project were evaluated in a human health risk assessment. According to the risk assessment, this project would meet Montana's negligible risk standard. As a result of the air quality analysis completed for the project, Permit #0982-11 would contain conditions and limitations to protect the air resources by minimizing air impacts.

A minor conservation of energy resources would be realized from the proposed project because waste tires would be used (for up to 15% of the total fuel heat input) as a supplemental fuel for the kiln; landfill space would be conserved; and illegal disposal of tires could be reduced in Montana. In 1996, according to the Scrap Tire Management Council, approximately 152 million tires were incinerated as supplementary fuel at 107 facilities across the United States, including 35 cement kilns, 23 pulp and paper facilities, 15 electric utilities, and 34 other industrial and electric generation facilities. In the United States, more than 270 million waste tires are generated annually. As indicated by the Scrap Tire Management Council, there were nearly 549 to 800 million scrap tires stockpiled in the United States in 1996. Montana may generate approximately 670,000 to 900,000 tires per year. Additionally, approximately 500,000 tires have been stockpiled from illegal dumping, lack of disposal alternatives, or economically unviable recycling projects. As indicated by Holcim, the Trident plant would combust up to 1,137,539 waste tires per year in the kiln, based on continuous plant operation. In order to maintain a consistent supply of waste tires for the facility, Holcim would likely rely on a contractor to gather and deliver the tires from Montana and/or neighboring states, as necessary, for use. Besides tire-derived fuel, other waste tire management alternatives potentially available include activities such as tire re-treading, volume reduction, various civil engineering applications, and rubberized asphalt. However, capital costs, demand, and marketability associated with the potential alternatives would affect the use of these alternatives. None of the tire management alternatives are currently being conducted commercially in Montana.

Consideration was not given in the risk assessment or other analyses for the project to the existing HAPs and non-regulated pollutant emissions because such consideration is not required by the Clean Air Act and associated rules. Consideration of these existing emissions in the analyses may indicate that a significant cumulative impact on air resources or water resources would occur. Therefore, until additional analyses are completed, the cumulative impacts on air and water resources are unknown.

I. Historical and Archaeological Sites

Potential impacts on historical and archaeological sites from this project would be minor, if any, because it would take place at the Holcim facility within a previously disturbed, active industrial site. In addition, further land surface disturbance would be limited. Installation of the equipment for the project would require the use of motor vehicles or other heavy equipment, but the impacts would be very minor and of short duration. Once the applicable equipment was installed, the waste tires would be transported to the kiln from the covered storage using a conveyor system.

The Department contacted the Montana Historical Society - State Historic Preservation Office (SHPO) in an effort to identify any historical, archaeological, or paleontological sites or findings near the proposed project. SHPO's records indicate that there are currently no previously recorded historic or archeological sites within the project site. Because the project would occur at a previously disturbed site, the likelihood of finding undiscovered or unrecorded historical properties would be low. However, if cultural materials were encountered during the course of the project, SHPO requested that they be contacted and the site investigated. Neither the Department nor SHPO has the authority to require a cultural resource inventory for this project.

The Missouri River Headwaters State Park is located approximately ½ - 1 mile south of the Holcim facility. The Holcim project would result in increased traffic on the road to the Missouri River Headwaters State Park. However, the impacts to the Missouri River Headwaters State Park from the increased traffic would be minor. In addition, the air emissions from the proposed project would result in minor impacts to the Missouri River Headwaters State Park. Based on the air modeling analyses conducted for this project, the proposed project would comply with the applicable air quality rules and standards; therefore, the project would have minor impacts on the Missouri River Headwaters State Park.

J. Cumulative and Secondary Impacts

The cumulative and secondary impacts from this project may significantly affect the physical and biological aspects of the human environment. Although the human health risk assessment indicated that the impacts from this project would be minor, the cumulative effects from this proposal and the current emitting activities at Holcim were not considered in the analysis, other than for dioxin emissions. Consideration of the other existing air emissions may influence the results of the analyses such that a significant cumulative impact is predicted.

The human health risk assessment included an evaluation of the potential cancer risks and noncancer hazards from potential exposure to pollutants of concern from this project, specifically HAPs. Results of the human health risk assessment demonstrated that the proposed project would not result in an excess lifetime cancer risk or non-cancer hazard that exceeds Montana's negligible risk standard for any individual chemical of concern, or for the aggregate of the pollutants of concern. Similarly, the screening level ecological risk assessment indicated that exposure created from this project would be unlikely to pose an unacceptable hazard to ecological receptors in the vicinity of the Trident Plant. However, in both the human health risk assessment and the screening level ecological risk assessment, the resulting impacts may be significant if existing HAP emissions and non-regulated pollutant emissions are factored into the analyses.

The physical disturbance to the site from tire storage, tire conveyors, and the new kiln gate would be minor because the construction of the equipment would take place on existing facility property within the confines of the plant. Because the waste tires would be used as a supplemental fuel for the kiln, landfill space might be conserved and illegal disposal of tires might be reduced in Montana.

The cumulative impacts to the physical and biological aspects of the human environment from this project may be significant. However, until additional cumulative analyses are completed, the cumulative impacts from this project on the physical and biological aspects of the human environment, in conjunction with existing emissions, are unknown.

8. **The following table summarizes the potential economic and social effects of the proposed project on the human environment.** The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue					X	Yes
D	Agricultural or Industrial Production					X	Yes
E	Human Health					X	Yes
F	Access to and Quality of Recreational and Wilderness Activities					X	Yes
G	Quantity and Distribution of Employment					X	Yes
H	Distribution of Population					X	Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts					X	Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed use of waste tires as a supplemental fuel at the Holcim cement manufacturing plant would not cause a disruption to any native or traditional lifestyles or communities (i.e., social structures or mores) in the area because the project would occur at a previously disturbed industrial site. The Trident plant is located near the Missouri Headwaters approximately 5 miles northeast of Three Forks and approximately 30 miles west of Bozeman. Modifications to the Trident facility as a result of the project would be relatively minimal and would not be out of place compared to other onsite activities or structures. Some additional traffic in the area would occur but it would be minimal in relation to the overall day-to-day traffic in the area. Tires would be stored on-site in covered storage to minimize visual disruption, fire potential, rodent infestation, and insect infestation. Land in the adjacent area would continue to be used for farming, ranching, livestock grazing, rangeland, and recreation. Recreational opportunities would continue to be available along the Missouri River and at the Missouri River Headwaters State Park area.

B. Cultural Uniqueness and Diversity

Cultural uniqueness and diversity of the area around the proposed project would not change because the project would occur at a previously disturbed industrial location. The area in the vicinity of the plant is currently used for various activities including farming, ranching, and recreation. With the implementation of the proposed project, the Trident plant would continue to manufacture cement, and the surrounding area would continue to be used for farming, ranching, and recreational purposes. Overall, the project would have no impact on cultural uniqueness and diversity because it would be completed on previously disturbed industrial land and the surrounding area land use would not change as a result of the project.

C. Local and State Tax Base and Tax Revenue

This project would have a minor effect on the local and state tax base and tax revenue because, other than some specialized personnel during the installation of the kiln gate, conveyor system, and other ancillary equipment necessary for the proposed project, Holcim would not likely employ additional permanent personnel at the plant as a result of the project. Additional peripheral jobs may be created from the transfer and storage of the waste tires. Revenue generated from the landfills that currently accept waste tires would be reduced, but the overall impact to the local and state tax base and tax revenue would be minor. Secondary impacts on the local and state tax base and tax revenue, however, may be significant. Comments submitted during the public comment period indicated that current businesses and residents in the area may move out of the area based on this project. Businesses and residents outside the state may avoid the Bozeman area (or even the state) based on the Holcim proposal. Therefore, until additional analyses are completed, the cumulative impacts on local and state tax base and tax revenue are unknown.

D. Agricultural or Industrial Production

Minor impacts, if any, on local agricultural production would result from this project because the proposed use of waste tires (as a supplemental fuel for the kiln) would be conducted within a previously disturbed mining/industrial cement manufacturing facility; land use in the local area would continue to be used for farming, ranching, and livestock grazing; and the corresponding impacts from the air emissions would be minor. Waste tires would be stored on-site in covered storage to minimize fire potential and rodent and insect infestation. Site-specific air dispersion modeling, as described in Section 7.F of the EA, also demonstrated that air emissions from the use of waste tires as a fuel would not cause an exceedance of the NAAQS or MAAQS for the criteria pollutants. In addition, the modeling for the projected change in constituents of HAP emissions from the use of tires (which included the potential human health risk associated with the consumption of local agricultural produce) demonstrated that the proposed project would not be expected to result in an excess lifetime cancer risk or noncancer hazard that exceeds Montana's negligible risk standard for any individual chemical of concern, or for the aggregate of the pollutants of concern. The screening level ecological risk assessment indicated that exposure from the air emissions associated with the proposed project on local vegetation would be minor. The representative native plant species selected in the area was the juniper plant. The potential hazard for the juniper plant was evaluated by comparing the modeled average soil concentration to soil phytotoxicity benchmarks. The hazard index for the juniper plant was below one ($1.35E-01$), which indicates that the adverse impacts would be minor.

The potential impact to organic farms in the vicinity of the Trident Plant was evaluated based on the availability of both federal and/or Montana organic farming standards for chemicals in soil and water. Doug Crabtree of the Montana Department of Agriculture indicated that Montana plans to adopt the federal organic farming program for certifying and supervising organic farms and farm products but has not yet developed organic farming standards. Keith Jones, Director of Program Development, NOP, USDA indicated that neither the NOP nor the USDA have developed organic farming standards for metals or organics in soil or water. The level that constitutes unavoidable residual environmental contamination in the new federal organic farming standards (Section 205.671) is 5% of the EPA tolerance level or the FDA action level; however, the EPA and FDA levels apply to pesticides, not the COPC evaluated in the human health risk assessment. However, based on the overall conservative approach of the risk assessment and screening level risk assessment and the local dispersion characteristics, the impacts to organic farms would be very minor, if any.

Additional traffic in the area near the facility would likely occur but it would be very minimal in relation to the overall day-to-day traffic in the area. According to the Montana Department of Transportation (MDT), the annual average daily traffic on State Secondary 205 between Interstate

90 and State Secondary Route 286 in the year 2000 was 1,140 vehicles per day and 675 vehicles per day from State Secondary Route 286 to the Holcim Plant. The estimated increase in traffic between the East Three Forks Interchange and the Holcim Plant necessary to bring in tires would be about 1,300 additional trucks per year. This equates to approximately 3.6 trucks per day or a 0.5% increase in traffic (if tires are delivered by truck). Tires could potentially be delivered by train instead or in addition to delivery by truck. Because the facility would be supplementing (not adding to) the current fuel requirements for the kiln (up to 15% on a Btu basis) and the facility would be limited to the conditions contained in Permit #0982-11, increased industrial production would not occur at the Trident Plant from the current project.

The analysis of impacts to agricultural or industrial production was based solely on the proposed project. Consideration was not given in the analyses for the project to the existing HAP and non-regulated pollutant emissions, except for dioxin, because such consideration was not required by the Clean Air Act and associated rules. Consideration of these existing emissions in the analyses may indicate that a significant cumulative impact on agricultural production would occur. Therefore, until additional analyses are completed, the cumulative impacts on agricultural production are unknown.

E. Human Health

As described in Section 7.F of this EA, the impacts from only the proposed project on human health would be minor because the change in emissions would be small and the resulting impacts would be minor. Modeled impacts, taking into account air dispersion characteristics (i.e., wind speed, wind direction, atmospheric stability, stack height, stack temperature) were low and were below the MAAQS and NAAQS. The air quality permit for this facility would establish conditions to minimize emissions and allow the facility to be operated in compliance with all applicable air quality rules. These rules are designed to protect human health. Besides the criteria pollutants, the impacts from other air pollutants of concern for the proposed project were addressed in the human health risk assessment. The human health risk assessment demonstrated that the proposed project would not be expected to result in a change in excess lifetime cancer risk or noncancer hazard that exceeds Montana's negligible risk standard for any individual COPC, or for the aggregate of the pollutants of concern.

Other than dioxin emissions, the human health risk assessment was not based on the emissions from all of the HAP emission sources at Holcim. Instead, only specific HAP emissions resulting from the combustion of tires (not the entire facility) were considered in the analysis. Also, HAP emissions for which risk information was not available were not considered in the analysis. Consideration of HAP emissions from the other emitting sources at Holcim is not required by the Clean Air Act and corresponding rules. However, consideration in the analyses of the impacts from other existing HAP emissions, existing non-regulated pollutant emissions, and those project emissions that were eliminated due to a lack of corresponding risk information may indicate that the cumulative impacts on human health would be significant. Therefore, until additional analyses are completed, the cumulative impacts on human health are unknown.

F. Access to and Quality of Recreational and Wilderness Activities

As a result of the upcoming bicentennial celebration of the Lewis and Clark expedition, more recreational visitors would be expected to visit the Missouri River, its tributaries, and the Missouri River Headwaters State Park. However, this project would not likely alter any existing access to or quality of any recreational or wilderness area. This project would have minimal, if any, impact on recreational or wilderness activities because the project activities would take place within the existing facility's boundaries.

Onsite land disturbance would be very minor and temporary from the installation/modification of the kiln and other equipment at the plant. Installation/modification to the facility would require the use of motor vehicles or other heavy equipment, but the impacts would be minor and of short duration. Once the modifications were complete, waste tires would be transported to the facility by truck or rail and stored in covered storage. Eventually, the waste tires would be transported by means of a conveyor system to the kiln for combustion. The tire conveyor system and associated equipment would be located inside the property boundary and vehicle traffic associated with these activities would primarily use existing paved and non-paved roads. The amount of vehicle activity in the area is not expected to increase substantially over the existing traffic and, as a result, the potential impacts from traffic would be minor.

Air dispersion modeling, as described in Section 7.F of the EA, demonstrated that air emissions from the facility would not cause an exceedance of the Primary or Secondary NAAQS or MAAQS, including at recreational areas such as the Missouri River Headwaters State Park or the Missouri River. Also, the projected changes in potential hazardous air emissions from the project were evaluated in a human health risk assessment. The purpose of the human health risk assessment was to evaluate the potential carcinogenic and non-carcinogenic hazards that would be attributed to the proposed project. Results of the risk assessment demonstrated compliance with Montana's negligible risk standard, as described in Section 7.F of the EA.

Any impacts on recreational and wilderness activities in the area would be minor. Again, other than dioxin emissions, only the emissions from the combustion of tires were considered. Consideration of other existing HAP emissions and non-regulated pollutant emissions in the analyses may indicate that a significant cumulative impact on the quality of recreational activities would occur. Until the cumulative analyses are completed, the cumulative impacts are unknown.

G. Quantity and Distribution of Employment

The proposed use of waste tires as a supplemental fuel (up to 15% of the fuel input) for Holcim's operations would result in very minor impacts to the quantity and distribution of employment at the facility because no additional permanent employees would be expected to be hired at the facility as a result of this project. Other than some specialized personnel employed during the design and installation of the kiln gate, conveyor system, and other ancillary equipment necessary for the proposed project, the project would not require additional permanent plant personnel. A few temporary employment opportunities may result from various other portions of the project. Additional peripheral employment opportunities may be created and/or redistributed for the transfer and storage of the waste tires, but the overall impacts to quantity and distribution of employment would be minor.

Comments were submitted during the public comment period that suggested that this project would cause the public to consider moving their homes and businesses elsewhere because of health concerns. Comments were also submitted that suggested that the proposed project would have a significant impact on the quantity and distribution of tourism-related employment in the area because of health concerns. Therefore, until additional analyses are completed, the impacts on the quantity and distribution of employment are unknown.

H. Distribution of Population

This project would not involve any significant physical or operational change to the facility that would impact the location, distribution, density, or growth rate of the human population in the area because, excluding the temporary positions that would result from the design and installation of the kiln gate, conveyor system, and other ancillary equipment, the employment opportunities created from this project would be very minimal, if any. The temporary/contract positions would not affect

the distribution of population in the area. Most employees required for the design and installation of the required equipment would likely temporarily locate within the area, as needed. For the other miscellaneous related activities, the employees would likely be from the general area.

The Department received comments during the public comment period suggesting that the distribution of population may change. Numerous comments were submitted which suggested that residents would leave the Bozeman area, or not locate in the Bozeman area, if Holcim is allowed to use tires for fuel. Consideration of displaced homes and businesses may indicate that the impacts on employment and distribution of employment would be significant. Therefore, until additional analyses are completed, the impacts on the distribution of population are unknown.

I. Demands for Government Services

Demands on government services from this proposed project would be minor because the facility currently maintains a Montana Air Quality Permit and an air quality operating permit from the Department and the need for new or altered governmental services relating to the alteration of the current air quality permit would be minor. The site would require inspections and an annual review for license renewal by Solid Waste Program personnel. The Gallatin County Health Officer would also have to approve the issuance of the solid waste facility license. Overall, the permit requirements and compliance verification requirements for the permit would require relatively minor services from the government. Minor increases would be observed in local vehicle traffic on existing roads from the transportation of waste tires to the Holcim plant. According to the MDT, the annual average daily traffic on State Secondary 206 between Interstate 90 and State Secondary Route 286 in the year 2000 was approximately 1,140 vehicles per day and 675 vehicles per day from State Secondary Route 286 to the Holcim Plant. The estimated increase in traffic between the East Three Forks Interchange and the Holcim Plant would be about 1,300 additional trucks per year or, on average, about two trucks per day on the existing roadways. Therefore, there would not be any significant damage to the existing road by the additional loads caused by the proposed project.

J. Industrial and Commercial Activity

The proposed project to supplement up to 15% of the total heat input for the kiln with waste tires would represent only a minor increase in industrial and commercial activity in the area. The project would consist of the design and installation of a gate in the mid-section of the kiln that would allow the insertion of waste tires into the kiln for use as a fuel. Other ancillary activities required for the project would include the construction and installation of a conveyer system to deliver the tires to the kiln gate system for combustion. Tires would be stored onsite in covered storage to minimize potential fire and rodent and insect infestation. The actual kiln modification would require additional equipment and specialized personnel, but the impact to industrial and commercial activity would be temporary and minor.

K. Locally Adopted Environmental Plans and Goals

The Department is unaware of any locally adopted environmental plans and goals that would be affected by the project. The state standards, including the MAAQS, would be protective of the area surrounding the Holcim facility.

L. Cumulative and Secondary Impacts

The cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor because the proposed project would reduce a portion of other non-renewable fuels used at the Trident plant for the kiln and allow Holcim to be more competitive in the cement manufacturing marketplace. The project would also provide temporary employment opportunities and increase traffic in the area near the facility only a minimal amount. To minimize potential fire impacts, rodent infestation, and insect infestation, tires would be required to be stored on site in covered storage.

Other projects proposed by MDT in the area include the reconstruction project for the East Three Forks Interchange to improve traffic safety and another project to rebuild the bridge on State Secondary Route 205 over the Madison River.

Comments were submitted during the public comment period that suggested that the impacts from the Holcim proposal may potentially have significant impacts on the social and economic aspects of the human environment in the Gallatin Valley. For example, numerous physicians commented that the impacts from the air emissions from tire burning would lead to serious health problems for the local community. Others commented that the local economy, such as the tourism sector, the housing market, etc, would greatly suffer from the impacts of the Holcim project.

Recommendation: An environmental impact statement (EIS) is required because the potential impacts from the proposed project, in conjunction with current Holcim activities, may significantly affect the quality of the human environment. Public comment also identified cumulative impacts as a major issue regarding this proposed project. MEPA requires that this cumulative impact analysis be conducted before a decision can be made on the permit applications. Preparation of an EIS will allow the Department to generate the information necessary to conduct this analysis.

As part of the permitting process, Holcim must demonstrate that the use of TDF will pose no more than a negligible risk to human health and the environment. Holcim made this demonstration. However, the Clean Air Act of Montana and rules adopted under that act required only that this demonstration be made for the use of TDF, so the analysis did not take into account the existing impact from the Holcim facility. This is not a deficiency in the permit application. However, MEPA requires that the Department consider cumulative effects from the proposal to use TDF. An EIS is necessary to evaluate the cumulative impacts of combusting TDF in conjunction with the impacts of the existing facility.

In summary, the use of TDF at Holcim's Trident facility is a major issue for the surrounding area and for Montana. An EIS would enable the Department to more completely identify and disclose the potential cumulative impacts on human health and the environment from Holcim's facility, determine whether any of those impacts are significant, and, if so, identify any potential measures for mitigating those impacts. Therefore, an EIS is required for Holcim's application to use TDF at its Trident facility.

If an EIS is not required, explain why the EA is an appropriate level of analysis: NA

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Department of Environmental Quality - Permitting and Compliance Division/Solid Waste Licensing Program.

Individuals or groups contributing to this EA: The Montana Department of Environmental Quality (Air and Waste Management Bureau, Water Protection Bureau, Community Services Bureau); the Montana Natural Heritage Program; the Montana Department of Fish, Wildlife, and Parks; the Gallatin County Health Officer; the Gallatin County Health Department; and the State Historical Preservation Office.

Draft EA prepared by: Mark E. Peterson

Date: 11/29/02

Revised: 03/18/03

Final EA prepared by: Dan Walsh

Date: 08/13/03